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November 5, 2004

United States Environmental Protection Agency
Emergency Response Section
75 Hawthorne Street
San Francisco, California

TDD: 09-04-10-0002
Project: 0499.01RS

Attention: Janet Yocum, Federal On-Scene Coordinator

Subject: Trip Report 1
Bluewater Uranium Mine, Prewitt (Navajo Nation), New Mexico
Latitude: 35° 21' 02" North, Longitude: 107° 56' 46" West

Introduction

In October 2004, the United States Environmental Protection Agency (USEPA) Emergency Response Section (ERS) received a request from the Navajo Nation Environmental Protection Agency (NNEPA) to evaluate subsidence areas at the former Bluewater Uranium Mine near Prewitt, New Mexico. USEPA ERS Federal On-Scene Coordinator (FOSC) Janet Yocum tasked Ecology and Environment, Inc's Superfund Technical Assessment and Response Team (START) to conduct an initial gamma radiation survey at the subsidence areas. This letter report provides a summary of the results of the radiation survey conducted by the START on October 25, 2004.

Site Description

The Bluewater Uranium Mine consists of three nearby abandoned mining areas, the Brown-Vandever, Brown-Nanabah and Navajo Desiderio Mine, which are located in the central portion of western New Mexico. The radiation survey described in this report was conducted at subsidence areas specified by Mr. Brown on two Indian Allotment parcels within the Brown-Vandever and Brown-Nanabah mining areas (site).

The site is located at the foot of Haystack Butte approximately 5 miles west of Prewitt, New Mexico and 15 miles north of Grants, New Mexico (Attachment A, Figure 1). Elevations at the site range from approximately 6,900 to 7,100 feet above mean sea level. The site and surrounding land is primarily undeveloped with a small grouping of houses nearby. Current uses of the site reported by Mr. Brown and relayed by a NNEPA translator include grazing of animals and children playing. Based on START observations while on-site an additional use may be small-scale agriculture. The site is bordered by Haystack Butte to the north, small residential developments to the south/ southeast, and open land to the west and east. The Gabby residence is located south/southwest of the site and a dirt access road is located beyond the Gabby residence and continues to border the site

to the southeast and southwest. Drainage at the site is generally via sheet flow and natural drainage channels to the south.

Background

The Brown-Vandever and Brown-Nanabah mine sites are located on four parcels of land, which include two Indian Allotment parcels, one federal parcel administered by the Department of Energy (DOE), and one privately owned parcel. The Navajo-Desiderio mine consists of one parcel of Indian Allotment property. The EPA has previously conducted response actions on all three Indian Allotment parcels.

In August and September of 1991, the response action included the following:

- Filled, sealed, and capped mine adits, inclines and ventilation shafts to reduce the migration of radon gas emissions
- Applied earth cover to effectively reduce gamma radiation emissions
- Re-vegetated and posted warning signs of reclamated areas

Upon completion of the USEPA ERS response actions, gamma surveys indicated radiation levels had been reduced to natural conditions. Post-removal gamma surveys indicated the following:

- At the Brown-Vandever Mine area, the average gamma radiation reading was 13 micro-Roentgens per hour (μR/hr), and the maximum gamma radiation reading was 29 μR/hr.
- At the Brown-Nanabah Mine area, the average gamma radiation reading was 28 μR/hr, and the maximum gamma radiation reading was 56 μR/hr.

A letter, dated September 24, 1991[1], from the Agency for Toxic Substances and Disease Registry indicated that the "removal actions are satisfactory for those areas indicated and are protective of public health."

In October 2004, the NNEPA requested assistance from the USEPA based on observed areas of subsidence and potential radiation exposure to nearby residents.

USEPA/START Site Activities

On October 25, 2004, the USEPA, NNEPA and START visited the site to conduct a gamma radiation survey of the subsidence areas. The START utilized a LUDLUM Model 19 Micro R Meter to assess gamma radiation and each subsidence area was logged using global position satellite mapping. Results of the gamma radiation survey are presented in Table 1. Sample locations are shown in Attachment A, Figure 1. Background gamma radiation readings of approximately 6 μR/hr were collected beginning approximately one mile from the residences along the dirt road. Photographic documentation of subsidence areas are provided in Attachment B.

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[1] Agency for Toxic Substances and Disease Registry, Region 9, William Q. Nelson 1991 *Subject: Review of Response Actions at the Bluewater Uranium Site.* September 24

Table 1 - Radiation Survey Results
Bluewater Uranium Mine, Prewitt, New Mexico

Subsidence Area	Result (μR/hr)	Location Description
1	**60** **300** 6	at ground surface of subsidence perimeter inside subsidence area at waist level of subsidence perimeter
2	**30** **100** 12	at ground surface of subsidence perimeter inside subsidence area at waist level of subsidence perimeter
3	12	at ground surface of subsidence perimeter, inside subsidence area, and at waist level of subsidence perimeter
4	12	at ground surface of subsidence perimeter, inside subsidence area, and at waist level of subsidence perimeter
5	8 12 8	at ground surface of subsidence perimeter inside subsidence area at waist level of subsidence perimeter

Notes
(μR/hr) = micro-Roentgens per hour **Bold** indicates results is greater than twice background
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The results of the radiation survey indicate that at the ground surface and within subsidence areas 1 and 2, gamma radiation is present at greater than twice the background concentrations. The highest reading, 300 μR/hr, is approximately 50 times the background concentration for gamma emissions.

Alternatives for mitigating exposure of humans and animals to the gamma emissions greater than twice the background concentrations may include: filling the small subsidence areas with soil or expanding foam and capping the perimeter with soil; and/or installation of durable fencing around the subsidence areas to create a safe perimeter.

Summary and Conclusions

Historically the site, located in a rural area of New Mexico, has been used for mining of uranium ore. Current land uses at the site include: animal grazing and small residential settlements. Several areas of subsidence were reported to the NNEPA by nearby residents in 2004. This radiation survey, conducted in October 2004, indicated primarily background levels of gamma radiation were being emitted from the subsidence areas. Several readings greater than twice the background concentrations were reported in and near subsidence areas 1 and 2. Alternatives for mitigating exposure of humans and animals to the gamma emissions greater than twice the background

concentrations may include engineering controls such as fencing or adding clean soil in and around the subsidence areas.

This report concludes work under this project. If you have any questions, please feel free to contact this office.

Respectfully submitted,

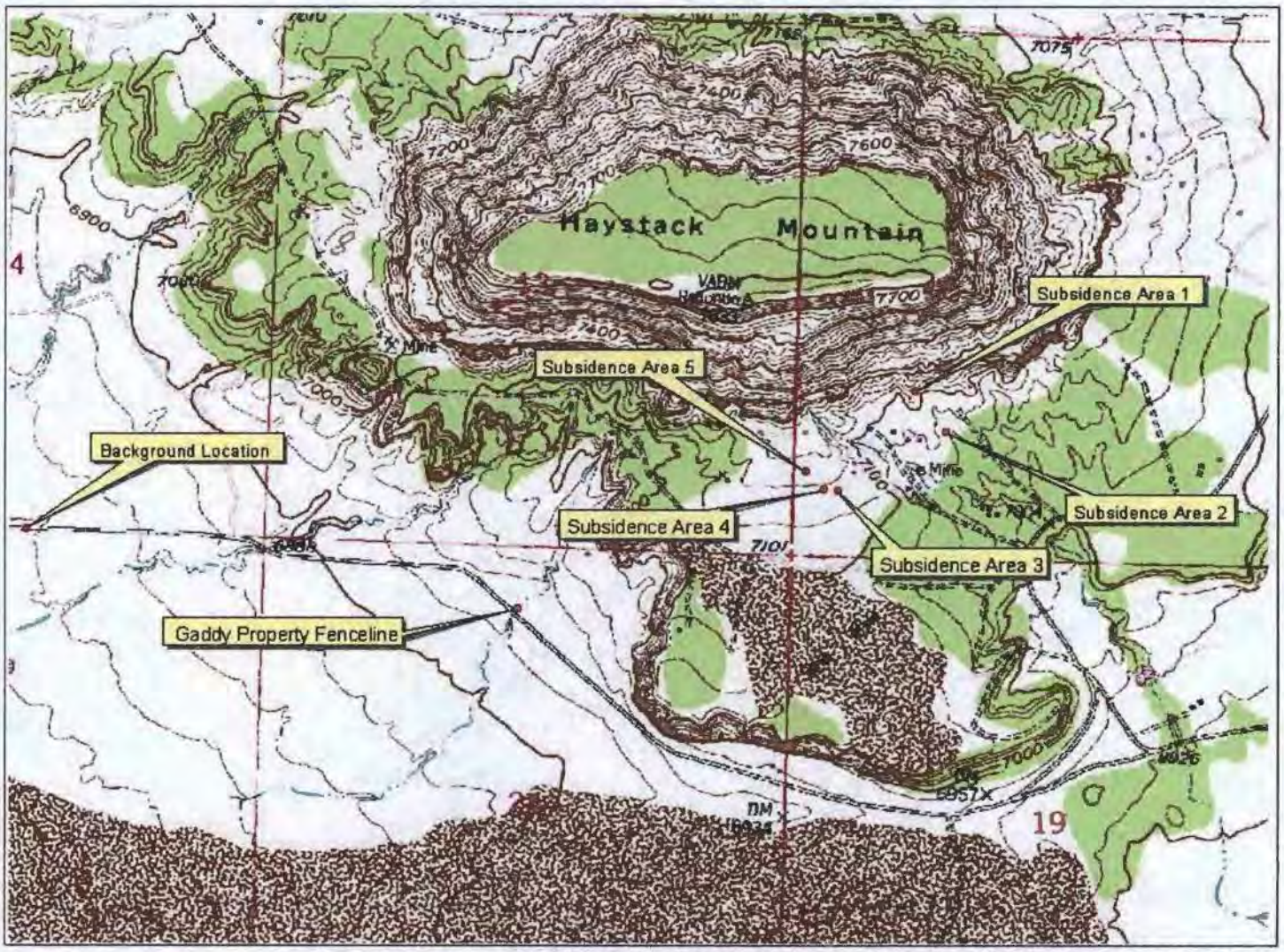
Trisha J. Woolslayer

Trisha Woolslayer, CHMM
START Project Manager

cc: Electronic Deliverable System 2
START project file

Attachments A: Figure 1 - Site and Subsidence Area Location Map
B: Photo Documentation

Attachment A



USGS 7.5 Minute Topographic Series, Bluewater, New Mexico Quadrangle, 1980

QUADRANGLE LOCATION

0 1000 2000 3000 4000 Feet

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Figure 1: Site and Subsidence Area Location Map
Bluewater Uranium Survey
Prewitt, Navajo Nation, Arizona

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Attachment B

Bluewater Uranium Mine
Prewitt, New Mexico

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PHOTO 1

Date: October 25, 2004

Direction: N/A

Photographer: T. Woolslayer

Description: View of subsidence area 1. Highest gamma radiation reading = 300 µR/hr.

PHOTO 2

Date: October 25, 2004

Direction: Southwest

Photographer: T. Woolslayer

Description: View of subsidence area 2 used as a trash pit. Highest gamma radiation reading = 100 µR/hr.

PHOTO 3

Date: October 25, 2004

Direction: N/A

Photographer: T. Woolslayer

Description: View of subsidence area 3. Highest gamma radiation reading = 12 µR/hr (twice the background concentration).

PHOTO 4

Date: October 25, 2004

Direction: Northeast

Photographer: T. Woolslayer

Description: View of subsidence area 4. Highest gamma radiation reading = 12 µR/hr (twice the background concentration).

PHOTO 5

Date: October 25, 2004

Direction: North

Photographer: T. Woolslayer

Description: View of subsidence area 5 (field notebook included for scale). Highest gamma radiation reading = 12 µR/hr (twice the background concentration).